

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:)	Confirmation No.: 1206
)	
Fred Busch, et al.)	Customer No.: 29052
)	
Application No.: 10/537,141)	Art Unit: 1616
)	
Filing Date: November 13, 2006)	Examiner: Schlientz, Nathan W.
)	
For: Composition and Method for)	Attorney Docket No.: 24004-0018
Treating Plant Fungal Disease)	

**DECLARATION OF DAVID E. WIGLEY
IN SUPPORT OF PETITION UNDER 37 C.F.R. § 1.47(a)**

Via EFS-Web

Mail Stop: Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

I, David E. Wigley, do hereby declare:

1. I am the attorney of record for the above-identified patent application.
2. The correct inventorship of this U.S. national stage application is Fred Busch and Steve R. Burwell. A declaration was executed by Messrs. Busch and Burwell in accordance with 37 C.F.R. § 1.63 and was filed on November 7, 2006.
3. The above-identified application is a National Stage application of international application PCT/US2003/038118. Peter Gouldthorpe was incorrectly named as an inventor in the international application. No change to the inventive entity in the international application was effected under PCT Rule 92*bis* prior to the expiration of 30 months from the priority date.
4. On January 28, 2011, I spoke with Mr. Gouldthorpe by telephone to discuss the referenced application, inventorship, and the error in naming the proper inventive entity of the subject application. During that conversation, Mr. Gouldthorpe agreed that he had no part in conception of the invention.
5. Subsequently, I prepared a draft Statement under 37 C.F.R. § 1.497(d)(1) for review and execution by Mr. Gouldthorpe, certifying that the error in inventorship occurred

without deceptive intention on his part. The draft Statement was forwarded to Mr. Gouldthorpe on February 14, 2011, and a copy of the correspondence and Statement is attached as **Exhibit A**.

6. Mr. Gouldthorpe did not respond to my February 14, 2011 correspondence. On March 17, 2011, I sent another correspondence to Mr. Gouldthorpe, again attaching the draft Statement under 37 C.F.R. § 1.497(d)(1), and requesting his review and execution of the Statement. A copy of my March 17, 2011, correspondence and attachment appear at **Exhibit B**.

7. On March 18, 2011, Mr. Gouldthorpe replied to my request, indicating his refusal to sign the § 1.497(d)(1) Statement. A copy of his correspondence dated March 18, 2011, is attached to this Declaration as **Exhibit C**.

8. On March 29, 2011, I posted a letter to Mr. Gouldthorpe by Certified Mail, attaching a copy of the pending application, the current claim set, and the draft Statement under 37 C.F.R. § 1.497(d)(1), requesting that Mr. Gouldthorpe review, sign, and return the Statement. A copy of the letter with attachments and the Certified Mail Receipt are provided at **Exhibit D**.

9. The same evening, March 29, 2011, I sent by e-mail a copy of the letter and attachments (**Exhibit D**) that I posted earlier that day. A copy of my correspondence is attached as **Exhibit E**.

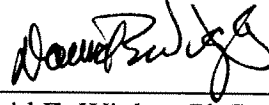
10. The letter and attachments sent by Certified Mail were received on March 31, 2011. A copy of the Return Receipt signed by Sandra Gouldthorpe is attached at **Exhibit F**.

11. By April 6, 2011, no contact or response had been received from Mr. Gouldthorpe. I made another effort to obtain a reply and forwarded another copy of my March 29, 2011 letter with attachments (**Exhibit D**), requesting some response. A copy of this correspondence appears at **Exhibit G**. No reply has been received from Mr. Gouldthorpe as of the date this paper is signed.

12. I declare that all statements made herein of my own knowledge and belief are true and that all statements made on information and belief are believed to be true, and further that the statements are made with the knowledge that willful false statements are punishable by fine or imprisonment, or both, under section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

Application No.: 10/537,141
Filed: November 13, 2006
Declaration of David E. Wigley in Support of
Petition Under 37 C.F.R. § 1.47(a)

Respectfully submitted,

A handwritten signature in black ink, appearing to read "David E. Wigley", is written over a horizontal line.

David E. Wigley, Ph.D.
Attorney for Assignee
Reg. No. 52,362

Date: April 8, 2011

SUTHERLAND ASBILL & BRENNAN LLP
999 Peachtree Street, NE
Atlanta, GA 30309-3996
Telephone: (404) 853-8072
Facsimile: (404) 853-8806

Attorney Docket No.: 24004-0018

EXHIBIT A

Wigley, David

From: Wigley, David
Sent: Monday, February 14, 2011 10:34 AM
To: 'pkgould@juno.com'
Cc: Pappas, Pete G.
Subject: Plant fungal diseases certification
Follow Up Flag: Follow up
Flag Status: Blue
Attachments: 24004-0018 Statement by P Gouldthorpe.doc

Dear Pete,

Thank you for speaking with me recently about the "Plant Fungal Diseases" patent application and for your follow-up voice mail. A copy of the certification statement is attached for your review and execution. Please review, sign and date where indicated, and return to me at the address below. If you have any questions, please contact me or Mr. Pete Pappas, head of Sutherland's IP group (404-853-8064). Thanks again.

Regards,
David

David E. Wigley, Ph.D. | *Counsel*

SUTHERLAND

Sutherland Asbill & Brennan LLP
999 Peachtree Street NE | Atlanta, GA 30309-3996
404.853.8072 direct | 404.853.8806 facsimile
david.wigley@sutherland.com | www.sutherland.com

4/7/2011

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:)	Confirmation No.: 1206
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Fred Busch, et al.)	Customer No.: 29052
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Application No.: 10/537,141)	Art Unit: 1616
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For: Composition and Method for Treating)	Attorney Docket No.: 24004-0018
Plant Fungal Disease)	

STATEMENT UNDER 37 C.F.R. 1.497(d)(1)

Via EFS-Web
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

I, Peter Gouldthorpe, respectfully request that I be deleted as an inventor from the above-identified U.S. national stage application of International Application Number PCT/US2003/038118. Any error in inventorship in the International Application occurred without deceptive intention on my part.

Respectfully submitted,

By: _____
Peter Gouldthorpe

Date: _____

EXHIBIT B

Wigley, David

From: Wigley, David
Sent: Thursday, March 17, 2011 8:31 PM
To: 'pkgould@juno.com'
Cc: Pappas, Pete G.
Subject: Plant fungal diseases certification
Attachments: 24004-0018 Statement by P Gouldthorpe.doc

Hello Pete,

We haven't heard back from you on the certification statement we discussed a few weeks ago. In case you haven't had a chance to look at this yet, I am attaching a copy again for your review. Please sign and date where indicated and return to me at the address below at your earliest convenience. If you have any questions, please call me (404-853-8072) or Pete Pappas (404-853-8064) anytime. Thanks.

Regards,
David

David E. Wigley, Ph.D. | *Counsel* | 404.853.8072

From: Wigley, David
Sent: Monday, February 14, 2011 10:34 AM
To: 'pkgould@juno.com'
Cc: Pappas, Pete G.
Subject: Plant fungal diseases certification

Dear Pete,

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Regards,
David

David E. Wigley, Ph.D. | *Counsel*

SUTHERLAND

Sutherland Asbill & Brennan LLP
999 Peachtree Street NE | Atlanta, GA 30309-3996
404.853.8072 direct | 404.853.8806 facsimile
david.wigley@sutherland.com | www.sutherland.com

4/7/2011

PATENT

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STATEMENT UNDER 37 C.F.R. 1.497(d)(1)

Via EFS-Web
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

I, Peter Gouldthorpe, respectfully request that I be deleted as an inventor from the above-identified U.S. national stage application of International Application Number PCT/US2003/038118. Any error in inventorship in the International Application occurred without deceptive intention on my part.

Respectfully submitted,

By: _____
Peter Gouldthorpe

Date: _____

EXHIBIT C

Wigley, David

From: pkgould@juno.com
Sent: Friday, March 18, 2011 9:02 AM
To: Wigley, David
Subject: Re: Plant fungal diseases certification
Follow Up Flag: Follow up
Flag Status: Orange

I'm not interested in signing this. I let Mark know that a couple weeks ago.

Pete

\$67/Hr Job - 25 Openings

Part-Time job (\$20-\$65/hr). Requirements: Home Internet Access
NewsDaily7.com

EXHIBIT D

7002 2030 0002 6889 4382

U.S. Postal Service
CERTIFIED MAIL[®] RECEIPT
(Domestic Mail Only; No Insurance Coverage Provided)

For delivery information visit our website at www.usps.com

OFFICIAL USE

Postage	\$
Certified Fee	
Return Receipt Fee (Endorsement Required)	
Restricted Delivery Fee (Endorsement Required)	
Total Postage & Fees	\$

Postmark Here: MAR 29 2011

7004-0018

Sent To: Peter K. Gouldthorpe
 Street, Apt. No., or P.O. Box No. 5663 Forkwood Trace
 City, State, ZIP+4 Acworth GA 30101

SENDER: COMPLETE THIS SECTION

- Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

Peter K. Gouldthorpe
 5663 Forkwood Trace
 Acworth GA 30101

COMPLETE THIS SECTION ON DELIVERY

A. Signature
☒ Agent
☒ Addressee
 X Sandra Gouldthorpe

B. Received by (Printed Name) Sandra Gouldthorpe
 C. Date of Delivery 3/31/11

D. Is delivery address different from item 1? ☐ Yes
 If YES, enter delivery address below: ☐ No

3. Service Type
☒ Certified Mail ☐ Express Mail
☐ Registered ☒ Return Receipt for Merchandise
☐ Insured Mail ☐ C.O.D.

4. Restricted Delivery? (Extra Fee) ☐ Yes

2. Article Number
 (Transfer from service label)

7002 2030 0002 6889 4382

SUTHERLAND

DAVID E. WIGLEY, Ph.D.
DIRECT DIAL: 404.853.8072
EMAIL: david.wigley@sutherland.com

SUTHERLAND ASBILL & BRENNAN LLP
999 Peachtree Street, NE
Atlanta, GA 30309-3996
404.853.8000 Fax 404.853.8806
www.sutherland.com

March 29, 2011

VIA CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Mr. Peter K. Gouldthorpe
5663 Forkwood Trace
Acworth, GA 30101

RE: U.S. Patent Application Serial No. 10/537,141
"Compositions and Method for Treating Plant Fungal Disease"
Filed: November 13, 2006
Our Ref. No.: 24004-0018

Dear Mr. Gouldthorpe:

As we have discussed, Sutherland represents ByoCoat Enterprises, Inc. ("ByoCoat") in patent and trademark matters, and we write to you concerning the U.S. patent application referenced above. As you know, this U.S. application corresponds to an earlier-filed international application (Appl. No. PCT/US2003/038118), for which you were listed as one of the inventors. The referenced U.S. patent application is now pending, and it does not list you as an inventor. Copies of the U.S. application and pending claims are attached for your review.

Based on our investigation, we believe that you were incorrectly named as an actual inventor of the technology in the earlier international application. For example, an inventor must conceive of the definite and permanent idea of the complete and operative invention. Accordingly, we believe that the later U.S. application lists the correct inventors.

The U.S. Patent & Trademark Office (USPTO) has now required ByoCoat to correct this discrepancy between the earlier international application and the current U.S. application. According to statute and regulation, it is unlawful to represent a person as inventor to the USPTO, who is not an actual inventor. Compliance will require a statement by you, as required under the Code of Federal Regulations (37 C.F.R. § 1.497(d)(1)), which certifies that your listing as an inventor in the international (PCT) application occurred without deceptive intention on your part.

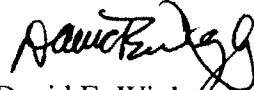
We have prepared a certification statement under 37 C.F.R. § 1.497(d)(1) for your review and execution. Please review the enclosed application and claims and this certification document, and please sign as indicated and return to us in the enclosed envelope. Of course, please consult your own attorney if you deem necessary.

Mr. Peter K. Gouldthorpe
March 29, 2011
Page 2 of 2

Should you have any questions about this request and declaration, please contact me (404-853-8072) or Mr. Pete Pappas (404-853-8064) in Sutherland's IP group.

Yours sincerely,

SUTHERLAND ASBILL & BRENNAN LLP

A handwritten signature in black ink, appearing to read "David E. Wigley".

David E. Wigley, Ph.D.

DEW/mag
Enclosures

cc: Peter G. Pappas, Esq.
Peter C. Quittmeyer, Esq.

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:)	Confirmation No.: 1206
)	
Fred Busch, et al.)	Customer No.: 29052
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Application No.: 10/537,141)	Art Unit: 1616
)	
§371(c) Date: November 13, 2006)	Examiner: Nathan W. Schlientz
)	
For: Composition and Method for Treating)	Attorney Docket No.: 24004-0018
Plant Fungal Disease)	

STATEMENT UNDER 37 C.F.R. 1.497(d)(1)

Via EFS-Web

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

I, Peter Gouldthorpe, respectfully request that I be deleted as an inventor from the above-identified U.S. national stage application of International Application Number PCT/US2003/038118. Any error in inventorship in the International Application occurred without deceptive intention on my part.

Respectfully submitted,

By: _____
Peter Gouldthorpe

Date: _____



US 20070082820A1

(19) **United States**

(12) **Patent Application Publication**
Busch et al.

(10) **Pub. No.: US 2007/0082820 A1**

(43) **Pub. Date: Apr. 12, 2007**

(54) **COMPOSITION AND METHOD FOR
TREATING PLANT FUNGAL DISEASE**

Related U.S. Application Data

(60) Provisional application No. 60/430,094, filed on Dec. 2, 2002.

(76) Inventors: **Fred Busch**, Clementon, NJ (US);
Steve R. Burwell, Humacao, PR (US)

Publication Classification

Correspondence Address:
NEEDLE & ROSENBERG, P.C.
SUITE 1000
999 PEACHTREE STREET
ATLANTA, GA 30309-3915 (US)

(51) **Int. Cl.**
A01N 43/34 (2006.01)
A01N 43/66 (2006.01)
A01N 43/40 (2006.01)
A01N 33/14 (2006.01)
(52) **U.S. Cl.** **504/155**; 514/358; 514/241;
514/612

(21) Appl. No.: **10/537,141**

(22) PCT Filed: **Dec. 2, 2003**

(86) PCT No.: **PCT/US03/38118**

§ 371(c)(1),
(2), (4) Date: **Nov. 13, 2006**

(57) **ABSTRACT**

The invention is directed to fungicide compositions adapted for preventing or inhibiting the witches' broom disorder. In one embodiment, the composition contains chlorothalonil, trichloromelamine, urea and water. The composition can be sprayed to the afflicted portions of the plant (i.e., the brooms) to eradicate or inhibit the growth of the disease.

COMPOSITION AND METHOD FOR TREATING PLANT FUNGAL DISEASE

[0001] This application claims the filing date benefit of the provisional application No. 60/430,094 filed Dec. 2, 2002; the provisional application is also incorporated herein in its entirety.

BACKGROUND OF THE INVENTION

[0002] Witches' broom (*Crinipellis perniciosa*) is a symptom in woody plants where many twigs are densely clustered together to create a mass of twigs resembling a broom. Witches' broom can develop on many types of plants and trees and is caused by various microorganisms, fungi or insects. A particular strand of witches' brooms which is caused by fungi can be found on cherry, blackberry and cocoa trees. Honeysuckle witches' broom is believed to be caused by an aphid.

[0003] Whatever the cause, witches' broom is considered to be a serious disease affecting crops in general and cocoa trees in Latin America. Witches' broom is believed to be indigenous to the Amazons and is now present in most of the cocoa growing regions in South America and the Caribbean islands. For example, witches' broom has been reported in Bolivia, Brazil, Colombia, Ecuador, Grenada, Guyana, Panama (on the South American side of the canal), Peru, St. Vincent, Surinam, Tobago, Trinidad, and Venezuela. Witches' broom was detected for the first time in Bahia, Brazil in 1989. It invaded the major growing areas of Brazil and ravaged production to the extent of 60% yield reduction during a four year period.

[0004] An infective propagule of *C. perniciosa*, is basidiospores which is produced in small mushroom-like basidiocarps. The basidiospores develop on brooms and diseased pods during rainy periods. They are then spread by wind and, upon landing on water, germinate and infect susceptible tissues of cacao. Vegetative brooms develop after infection of terminal and auxiliary buds. On the other hand, cushion brooms which resemble vegetative brooms develop from infected flower cushions as well as star blooms (diseased flowers) and chirimoya-like (diseased) pods. While infection of older pods results in little or no damage to pod content, infected seeds in developing pods of up to 12 weeks old are destroyed to the detriment of cocoa beans. Losses from witches' broom can affect up to 90% of the yield. Controlling witches' broom in cacao plants requires knowledge of many factors including disease epidemiology, favorable climates for disease prorogation, availability of pathogen inoculums and susceptible host tissues, sources of inoculums, the number of vegetative flushes and agronomic knowledge of plantation. These requirements coupled with the varying economic conditions make management and control of the disease difficult. Typically the disease is controlled by phytosanitation (pruning of witches' broom diseased sections from the tree) and chemical treatment. Any pruning should be done during the dry season and consequently this method may not be as practical or effective.

[0005] Applying protective fungicidal chemicals to developing pods on 7-day cycles has been found to be costly and ineffective. Indeed, it has been suggested that durable resistance offers that best management and control of witches' broom. Screening of germplasm and using the best resistant

germplasm has been suggested as additional means for producing resistant planting stocks.

[0006] If the diseased portions are left on the trees during the rainy season, the brooms begin to sporulate at the upper canopies. As a result, a flow of infective spores will be carried over and infect the new flower and foliage resulting in additional infections. During the following season the newly infected brooms will not produce spores and are a complete loss of the normal pod production. Although pruning the young infected trees can reduce the spreading, because of labor costs brooms are generally not removed. During the following rainy season the brooms will sporulate and cause further dispersal of the fungi. In addition, when the brooms are pruned they are often left on the ground area near the trees thereby providing a source for sporulation during the following rainy season.

[0007] It has been suggested that petroleum oil, such as those used for Sigatoka on banana, can be used to spray the old pruned brooms if it is applied prior to the start of the rainy season. Although petroleum oil is not a fungicide, it has been postulated that it provides a physical separator layer that stops absorption of rain water into the broom surfaces. Since the moisture within the infected brooms is considered to produce the basidiocarps for spore dispersal, the application of petroleum oil may reduce the spread. It should be noted however that the petroleum oil cannot be applied to new maturing cocoa pods, but only to the under story ground areas.

[0008] Thus, conventional means for controlling witches' broom include (i) keeping the trees short so that field crews can effectively locate and remove infected brooms; (ii) frequent pruning (every 10-14 days) to remove brooms and other infected material; (iii) removing pruned wood left on the grounds to avoid sporulation; and (iv) spraying the pruned brooms with petroleum oil to render the surfaces water-repellant.

[0009] These and other conventional methods have been found to be ineffective, costly and labor intensive. Thus, there is a need for chemical compositions and methods that can effectively inhibit and/or eradicate witches' broom from trees in general and from cocoa trees in particular.

DETAILED DESCRIPTION OF THE INVENTION

[0010] These and other needs can be addressed by applying a composition according to the principles of the invention to a tree or a plant afflicted with witches' broom. Accordingly, the embodiments of Applicants' invention are directed to compositions and methods for treating witches' broom in general and for treating witches' broom in cacao plants and mango trees in particular. Applicants have discovered that the synergistic effects of the constituents enumerated herein act in unison to substantially irradiate and inhibit the growth of witches' broom. The compositions described in the various embodiments of the invention can be directly applied or sprayed on the afflicted branches.

[0011] In one embodiment, the treatment includes applying an effective amount of a composition having an effective amount of a chloronitrile compound, a germicide, and a carrier. The germicide can be selected from the group consisting of diquat bromide, trichloromelamine, cetylpyri-

dinium chloride, chloramines-T and trichloromelamine. In addition, the chloronitrile compound can be chlorothalonil. In another embodiment, the invention is directed to a fungicide for eradicating or inhibiting witches' broom with a composition prepared by forming a mixture of a chloronitrile compound and a germicide; preparing a solution of urea in water and dissolving the mixture in the carrier solution to form the antimicrobial composition.

[0012] More particularly, an embodiment of the invention is directed to a composition comprising an organochlorine fungicide, a herbicide, and a carrier. The fungicide and herbicide can be mixed to form a solid mixture and then dissolved in a solution of urea and water to form a spray solution for treating witches' broom in trees. The carrier can be any conventional carrier, though a preferred carrier comprises a solution of urea and water.

[0013] The organochlorine fungicide can include any one or a combination of conventional chloronitrile. In one embodiment, the organochlorine fungicide is chlorothalonil. Additionally, fungicides including chloramines (NH_2Cl), trichloromelamine (bactericide) or chlorendic anhydride can be substituted in place of (or in addition to) chlorothalonil.

[0014] The herbicide can include any one or a combination of conventional herbicides. An exemplary herbicide is diquat bromide which has been conventionally known as a weed killer. Diquat (6,7-dihydrodipyrido-pyrazidinium) is a yellow crystal soluble in water. Other quaternary herbicides can include commercial products such as Avenge, Diquat and Paraquat.

[0015] The addition of one or more surfactants has been found to be particularly useful to enhance adhesion and penetration of the composition onto the surfaces being treated. The synergistic presence of the surfactants enables adequate penetration of the active composition within the witches' broom figs to destroy the afflicted cells. An exemplary surfactant is sold under the trade name TRITON X-100 which is identified as a non-ionic surfactant of the class octylphenol ethoxylate. TRITON X-100 is a suitable surfactant because, it is capable of providing the desired surface tension properties while being non-toxic to trees and humans. Another exemplary class of surfactants includes capped hydroxyethylamides which is both nonionic and nontoxic. The latter class is sold under the trade name PROMIDIUM™ (supplied by Uniqema.) A third class of exemplary surfactants is polyoxyethylene phenol, which is both non-ionic and non toxic. These type of surfactants are commonly sold under the trade name IGEPAL™.

[0016] The amount of surfactant in the composition can be varied depending on the desired application without departing from the spirit of the invention. While the amount of surfactant used is typically a function of the particular composition, an amount of about 0.001-10% by weight or volume of the composition can comprise one or more surfactant. In one embodiment of the invention, the surfactant is added in an amount of about 0.01 to 3 wt. %.

[0017] In another embodiment, a composition according to the principles of the invention comprises chlorothalonil, diquat bromide, urea and water. Chlorothalonil and diquat bromide can be admixed in a ratio of about 70:30 (wt. %) to form a mixture. Urea and water can be combined in a ratio of about 20:80 (wt. %) to form a solution. Then a quantity

of the first mixture can be dissolved in the solution at a ratio of about 0.05 ounces to one gallon of the carrier to form a composition according to one embodiment of the invention. In another embodiment, 40-90 wt. % (60-80 wt. %) of chlorothalonil is admixed with 60-10 wt. % (40-20 wt. %) diquat bromide to form a mixture. Then a solution is formed comprising 10-40 wt. % (10-30 wt. %) urea and 90-60 wt. % (90-70 wt. %) water to form a carrier solution. By combining about 0.02-1.0 ounces of the mixture with about 0.5-1.5 gallon, and preferably one gallon of the carrier solution, a composition according to an embodiment of the invention is formed.

[0018] In another embodiment, the composition of the invention includes chlorothalonil, trichloromelamine, urea and water. To form a composition according to this embodiment, chlorothalonil is admixed with trichloromelamine in a ratio of about 95:5 wt. % to form a mixture. About 0.05 ounces of this mixture is then dissolved in a 20:80 wt. % solution of urea in water to form a composition according to this embodiment of the invention. The ratios provided herein can be varied to more particularly formulate a solution for treating witches' broom. For example, about 0.2-2.0 ounces of a mixture of about 80-98 wt. % (90-98 wt. %) of chlorothalonil and 20-2 wt. % (10-2 wt. %) trichloromelamine can be dissolved in a solution of urea and water (10-40 wt. % urea and the balance water) to form a composition according an embodiment of the invention.

[0019] In still another embodiment, a composition of the invention includes cetylpyridinium chloride (or a similar quaternary ammonium salt) chlorothalonil, urea and water. To form a composition according to this embodiment, cetylpyridinium chloride is admixed with chlorothalonil in a ratio of about 10:90 wt. % to form a mixture. The mixture is then dissolved in urea and water in a ratio of about 1:19:80 (by weight) to form the desired composition. A similar formulation can be prepared by forming an admixture containing 5-30 wt. % (5-20 wt. %) of cetylpyridinium chloride with a balance of chlorothalonil to form an admixture and then dissolving about 0.05-2 wt. % of the admixture in 20 wt. % urea and 80 wt. % water.

[0020] In yet another embodiment, a composition of the invention includes chlorendic anhydride, chlorothalonil, urea and water. To form this composition, chlorendic anhydride and chlorothalonil are admixed in a ratio of about 0.5-5: 99.95-95 wt. % to form a mixture. The mixture is then dissolved in urea and water at a ratio of about 0.05-5:12-20: 80 (wt. %) to form the desired composition. A similar formulation can be prepared by forming an admixture containing 0.5-1.5 wt. % of chlorendic anhydride with 99.5-98.5 wt. % chlorothalonil and then dissolving about 0.05-2 wt. % of the admixture in 20 wt. % urea and 80 wt. % water.

[0021] In still another embodiment, a composition of the invention includes chloramine-T (sodium P-toluenesulf-chloramine), chlorothalonil, urea and water. To form this composition, chloramine-T and chlorothalonil are admixed in a ratio of about 5:95 wt. % to form a mixture. The mixture is then dissolved in urea and water in a ratio of about 0.05-5: 12-29: 80 (wt. %) to form the desired composition. A similar formulation can be prepared by forming an admixture containing 1-10 wt. % of chloramines-T with 99-90 wt% chlorothalonil to form an admixture and then dissolving about 0.05-2 wt. % of the admixture in about 20 wt. % urea and 80 wt. % water.

[0022] In yet another embodiment, a composition of the invention includes chlorothalonil, urea and water. To form this composition, chlorothalonil is dissolved in urea and water in a weight ratio of about 1:19:80 to create a fungicidal solution. A similar formulation can be prepared by dissolving 0.05-2 wt. % chlorothalonil in 20 wt. % urea and 80 wt. % water.

[0023] In still another embodiment, a composition of the invention includes chloramine-T, urea and water. To form this composition, chloramine-T is dissolved in urea and water in a weight ratio of about 1:19:80 to create a fungicidal solution. A similar formulation can be prepared by dissolving 0.05-2 wt. % chloramine-T in 20 wt. % urea and 80 wt. % water.

[0024] In yet another embodiment, a composition of the invention includes trichloromelamine dissolved in a carrier. To form this composition, trichloromelamine is dissolved in a solution of urea and water in a weight ratio of about 1:19:80 (wt. %) to create a fungicidal solution. A similar formulation can be prepared by dissolving 0.05-2 wt. % trichloromelamine in 20 wt. % urea and 80 wt. % water.

[0025] Although the ratios given herein are described in terms of weight percentage, the invention is not limited thereto and similar ratios, for example ratio based on volume, can be used without departing from the spirit of the invention.

[0026] Further, although the inventive embodiments described herein include specific compositions, it will be apparent to one of ordinary skill in the art that the principles of the invention can be extended to include a particular composition or a combination of elements not specifically recited herein and still be within the scope of this invention.

What is claimed is:

1. An antimicrobial composition comprising an effective amount of a chloronitrile compound, a germicide, urea and water.
2. The composition of claim 1, wherein the germicide is selected from the group consisting of diquat bromide, trichloromelamine, cetylpyridinium chloride, chloramines-T and trichloromelamine.
3. The composition of claim 1, wherein the chloronitrile compound is chlorothalonil.
4. The composition of claim 1, wherein the germicide is a bactericide.
5. The composition of claim 1, wherein the germicide is a herbicide.
6. The composition of claim 1, wherein the germicide is antimicrobial.
7. An antimicrobial composition consisting essentially of chlorothalonil, urea and water.
8. An antimicrobial composition consisting essentially of chloramine, urea and water.
9. An antimicrobial composition consisting essentially of trichloromelamine, urea and water.
10. An antimicrobial composition consisting essentially of chlorendic anhydride, chlorothalonil, urea and water.
11. A composition for preventing or retarding microbial growth in a plant, the composition produced by a process comprising:

providing a mixture of a chloronitrile compound and a germicide;

providing a solution of urea in water; and

dissolving the mixture in the solution to form the antimicrobial composition.

12. The antimicrobial composition of claim 11, wherein the chloronitrile compound is chlorothalonil.

13. The antimicrobial composition of claim 11, wherein the first mixture includes about 40-90 wt. % chlorothalonil and 60-10 wt. % diquat.

14. The antimicrobial composition of claim 11, wherein the mixture includes about 70 wt. % chlorothalonil and 30 wt. % diquat.

15. The antimicrobial composition of claim 11, wherein the solution further comprises about 10-40 wt. % urea and 90-60 wt. % water.

16. The antimicrobial composition of claim 11, wherein the solution further comprises about 20 wt. % urea and 80 wt. % water.

17. The antimicrobial composition of claim 11, wherein the antimicrobial composition comprises about 0.02-1.0 ounces of the mixture and about one gallon of the solution.

18. The antimicrobial composition of claim 11, wherein the antimicrobial composition comprises about 0.05 ounces of the mixture and about one gallon of the mixture.

19. The antimicrobial composition of claim 11, wherein the germicide is a bactericide.

20. The antimicrobial composition of claim 11, wherein the germicide is selected from the group consisting of diquat bromide, trichloromelamine, cetylpyridinium chloride, chloramines-T and trichloromelamine.

21. An antimicrobial composition for preventing or retarding microbial growth in a plant, the composition produced by a process comprising:

providing a first mixture of chlorothalonil and a bactericide;

providing a second mixture of urea dissolved in water; and

substantially dissolving the first mixture in the second mixture to form the antimicrobial composition.

22. The antimicrobial composition of claim 21, wherein the bactericide is trichloromelamine.

23. The antimicrobial composition of claim 21, wherein the step of providing the first mixture further comprises admixing about 80-98 wt. % of the chlorothalonil with 20-2 wt. % of the bactericide.

24. The antimicrobial composition of claim 21, wherein the step of providing the first mixture further comprises admixing the chlorothalonil and the bactericide in a weight ratio of 95:5.

25. The antimicrobial composition of claim 21, wherein the step of providing the first mixture further comprises dissolving 10-40 wt % of the urea in 90-60 wt % of water.

26. The antimicrobial composition of claim 21, wherein the step of providing the second mixture comprises dissolving urea in water in a weight ration of 20:80.

27. The antimicrobial composition of claim 21, wherein the step of combining the first mixture with the second mixture further comprises dissolving about 0.02-2.0 ounces of the first mixture in about one gallon of the second mixture.

28. The antimicrobial composition of claim 21, wherein the step of combining the first mixture with the second

mixture further comprises dissolving about 0.05 ounces of the first mixture in about one gallon of the second mixture.

29. An antimicrobial composition for treating Witches' Broom disorder in plants, the composition prepared by a process comprising:

providing a mixture of cetylpyridinium chloride and chlorothalonil;

forming the antimicrobial composition by dissolving the mixture in urea and water.

30. The antimicrobial composition of claim 29, wherein the mixture includes about 5-30 wt % of cetylpyridinium chloride and a balance of chlorothalonil.

31. The antimicrobial composition of claim 29, wherein the weight ratio of cetylpyridinium to chlorothalonil in the mixture is about 10:90.

32. The antimicrobial composition of claim 29, wherein the weight ratio of mixture:urea:water is in the range of 0.05-2:19.95-18:80.

33. The antimicrobial composition of claim 29, wherein the ratio of the mixture:urea:water is about 1:19:80.

34. An antimicrobial composition for preventing or inhibiting witches' broom disorder in plants, the composition produced by a process comprising:

forming a first mixture by admixing a chlorendic anhydride with chlorothalonil in the weight a ratio of about 0.05-5:99.95-95; and

dissolving the first mixture and urea in water in a weight ratio of about 0.5-2:19.95-18:80 to form the antimicrobial composition.

35. The antimicrobial composition of claim 34, wherein the weight ratio of chlorendic anhydride to chlorothalonil is about 1:99.

36. The antimicrobial composition of claim 34, wherein the ratio of the first mixture:urea:water is about 1:19:80.

37. An antimicrobial composition prepared by a process comprising:

providing a first mixture of chloramines-T and chlorothalonil in a weight ratio of about 1-10:99-90; and

dissolving the first mixture and a quantity of urea in water in a weight ratio of about 0.05-2:19.95-18:80 to form an antimicrobial composition.

38. The antimicrobial composition of claim 37, wherein the first mixture includes chloramines-T and chlorothalonil in the weight ratio of about 5:95.

39. The antimicrobial composition of claim 37, wherein the ratio of the first mixture:urea:water is about 1:19:80.

40. An antimicrobial composition prepared by a process comprising dissolving about 0.05-5 wt. % of chlorothalonil and about 12-20 wt % urea in about 80 wt % water to obtain the antimicrobial composition.

41. The antimicrobial composition of claim 40, wherein the weight ratio of chlorothalonil:urea:water is about 1:19:80.

42. An antimicrobial composition prepared by a process comprising dissolving about 0.05-5 wt. % of chloramine-T and about 12-29 wt % urea in about 80 wt % water to obtain the antimicrobial composition.

43. The antimicrobial composition of claim 42, wherein the weight ratio of chloramine-T :urea:water is about 1:19:80.

44. An antimicrobial composition prepared by a process comprising dissolving about 0.05-2 wt. % of trichloromelamine and about 19.95-18 wt % urea in about 80 wt % water to obtain the antimicrobial composition.

45. The antimicrobial composition of claim 44, wherein the weight ratio of trichloromelamine :urea:water is about 1:19:80.

* * * * *

Pending Claims for
US Patent Application No.: 10/537,141
For “**Composition and Method for Treating Plant Fungal Disease**”

Listing of Claims:

1. (Original) An antimicrobial composition comprising an effective amount of a chloronitrile compound, a germicide, urea and water.
2. (Currently amended) The composition of claim 1, wherein the germicide is selected from the group consisting of diquat bromide, ~~trichloromelamine~~, cetylpyridinium chloride, ~~chloramines-T~~ chloramine-T and trichloromelamine.
3. (Original) The composition of claim 1, wherein the chloronitrile compound is chlorothalonil.
4. (Original) The composition of claim 1, wherein the germicide is a bactericide.
5. (Original) The composition of claim 1, wherein the germicide is a herbicide.
6. (Original) The composition of claim 1, wherein the germicide is antimicrobial.
7. (Original) An antimicrobial composition consisting essentially of chlorothalonil, urea and water.
8. (Original) An antimicrobial composition consisting essentially of chloramine, urea and water.
9. (Original) An antimicrobial composition consisting essentially of trichloromelamine, urea and water.
10. (Original) An antimicrobial composition consisting essentially of chlorendic anhydride, chlorothalonil, urea and water.

11. (Original) A composition for preventing or retarding microbial growth in a plant, the composition produced by a process comprising:
 - providing a mixture of a chloronitrile compound and a germicide;
 - providing a solution of urea in water; and
 - dissolving the mixture in the solution to form the antimicrobial composition.
12. (Original) The antimicrobial composition of claim 11, wherein the chloronitrile compound is chlorothalonil.
13. (Currently amended) The antimicrobial composition of claim 11, wherein the ~~first~~ mixture includes about 40-90 wt.% chlorothalonil and 60-10 wt.% diquat.
14. (Original) The antimicrobial composition of claim 11, wherein the mixture includes about 70 wt.% chlorothalonil and 30 wt.% diquat.
15. (Original) The antimicrobial composition of claim 11, wherein the solution further comprises about 10-40 wt.% urea and 90-60 wt.% water.
16. (Original) The antimicrobial composition of claim 11, wherein the solution further comprises about 20 wt.% urea and 80 wt.% water.
17. (Original) The antimicrobial composition of claim 11, wherein the antimicrobial composition comprises about 0.02-1.0 ounces of the mixture and about one gallon of the solution.
18. (Original) The antimicrobial composition of claim 11, wherein the antimicrobial composition comprises about 0.05 ounces of the mixture and about one gallon of the mixture.
19. (Original) The antimicrobial composition of claim 11, wherein the germicide is a bactericide.
20. (Currently amended) The antimicrobial composition of claim 11, wherein the germicide is selected from the group consisting of diquat bromide, ~~trichloromelamine~~, cetylpyridinium chloride, ~~chloramines-T~~ chloramine-T and trichloromelamine.

21. (Original) An antimicrobial composition for preventing or retarding microbial growth in a plant, the composition produced by a process comprising:
 - providing a first mixture of chlorothalonil and a bactericide;
 - providing a second mixture of urea dissolved in water; and
 - substantially dissolving the first mixture in the second mixture to form the antimicrobial composition.
22. (Original) The antimicrobial composition of claim 21, wherein the bactericide is trichloromelamine.
23. (Original) The antimicrobial composition of claim 21, wherein the step of providing the first mixture further comprises admixing about 80-98 wt.% of the chlorothalonil with 20-2 wt.% of the bactericide.
24. (Original) The antimicrobial composition of claim 21, wherein the step of providing the first mixture further comprises admixing the chlorothalonil and the bactericide in a weight ratio of 95:5.
25. (Original) The antimicrobial composition of claim 21, wherein the step of providing the first mixture further comprises dissolving 10-40 wt% of the urea in 90-60 wt% of water.
26. (Original) The antimicrobial composition of claim 21, wherein the step of providing the second mixture comprises dissolving urea in water in a weight ration of 20:80.
27. (Original) The antimicrobial composition of claim 21, wherein the step of combining the first mixture with the second mixture further comprises dissolving about 0.02-2.0 ounces of the first mixture in about one gallon of the second mixture.
28. (Original) The antimicrobial composition of claim 21, wherein the step of combining the first mixture with the second mixture further comprises dissolving about 0.05 ounces of the first mixture in about one gallon of the second mixture.
29. (Original) An antimicrobial composition for treating Witches' Broom disorder in plants, the composition prepared by a process comprising:

providing a mixture of cetylpyridinium chloride and chlorothalonil;
forming the antimicrobial composition by dissolving the mixture in urea and water.

30. (Original) The antimicrobial composition of claim 29, wherein the mixture includes about 5-30 wt% of cetylpyridinium chloride and a balance of chlorothalonil.

31. (Original) The antimicrobial composition of claim 29, wherein the weight ratio of cetylpyridinium to chlorothalonil in the mixture is about 10:90.

32. (Currently amended) The antimicrobial composition of claim 29, wherein the weight ratio of mixture: urea: ~~water~~ water is in the range of 0.05-2:19.95-18:80.

33. (Original) The antimicrobial composition of claim 29, wherein the ratio of the mixture: urea: water is about 1:19:80.

34. (Original) An antimicrobial composition for preventing or inhibiting witches' broom disorder in plants, the composition produced by a process comprising:

forming a first mixture by admixing a chlorendic anhydride with chlorothalonil in the weight a ratio of about 0.05-5:99.95-95; and

dissolving the first mixture and urea in water in a weight ratio of about 0.5-2:19.95-18:80 to form the antimicrobial composition.

35. (Original) The antimicrobial composition of claim 34, wherein the weight ratio of chlorendic anhydride to chlorothalonil is about 1:99.

36. (Original) The antimicrobial composition of claim 34, wherein the ratio of the first mixture:urea:water is about 1:19:80.

37. (Currently amended) An antimicrobial composition prepared by a process comprising:
providing a first mixture of ~~chloramines-T~~ chloramine-T and chlorothalonil in a weight ratio of about 1-10:99-90; and

dissolving the first mixture and a quantity of urea in water in a weight ratio of about 0.05-2:19.95-18:80 to form an antimicrobial composition.

38. (Currently amended) The antimicrobial composition of claim 37, wherein the first mixture includes ~~chloramines-T~~ chloramine-T and chlorothalonil in the weight ratio of about 5:95.
39. (Original) The antimicrobial composition of claim 37, wherein the ratio of the first mixture:urea:water is about 1:19:80.
40. (Original) An antimicrobial composition prepared by a process comprising dissolving about 0.05-5 wt.% of chlorothalonil and about 12-20 wt% urea in about 80 wt% water to obtain the antimicrobial composition.
41. (Original) The antimicrobial composition of claim 40, wherein the weight ratio of chlorothalonil:urea:water is about 1:19:80.
42. (Original) An antimicrobial composition prepared by a process comprising dissolving about 0.05-5 wt.% of chloramine-T and about 12-29 wt% urea in about 80 wt% water to obtain the antimicrobial composition.
43. (Original) The antimicrobial composition of claim 42, wherein the weight ratio of chloramine-T:urea:water is about 1:19:80.
44. (Original) An antimicrobial composition prepared by a process comprising dissolving about 0.05-2 wt.% of trichloromelamine and about 19.95-18 wt% urea in about 80 wt% water to obtain the antimicrobial composition.
45. (Original) The antimicrobial composition of claim 44, wherein the weight ratio of trichloromelamine:urea:water is about 1:19:80.

EXHIBIT E

Wigley, David

From: Wigley, David
Sent: Tuesday, March 29, 2011 8:21 PM
To: 'pkgould@juno.com'
Cc: Pappas, Pete G.; Quittmeyer, Peter C.; Wigley, David
Subject: Correspondence regarding U.S. Pat. Appl. 10/537,141
Importance: High
Follow Up Flag: Follow up
Flag Status: Purple
Attachments: 03-29-11 Ltr to P.Gouldthorpe from D.Wigley.pdf; Certification Statement.pdf; Published Patent Application.pdf; Pending Claims.pdf

29 March 2011

Dear Pete,

Attached is a courtesy copy of a letter regarding inventorship and the ByoCoat "Plant Fungal Diseases" application (10/537,141) that we sent to you today by Certified Mail, along with enclosures that include the application itself, the currently pending claims, and the certification statement we have discussed previously. Please let me know if you would like to discuss this again.

Yours sincerely,

David E. Wigley, Ph.D. | *Counsel*

SUTHERLAND

Sutherland Asbill & Brennan LLP

999 Peachtree Street NE | Atlanta, GA 30309-3996
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david.wigley@sutherland.com | www.sutherland.com

4/7/2011

EXHIBIT F

SENDER: COMPLETE THIS SECTION		COMPLETE THIS SECTION ON DELIVERY	
<p>■ Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired.</p> <p>■ Print your name and address on the reverse so that we can return the card to you.</p> <p>■ Attach this card to the back of the mailpiece, or on the front if space permits.</p>		<p>A. Signature X <i>Sandra Gouldthorpe</i> <input type="checkbox"/> Agent <input type="checkbox"/> Addressee</p>	
<p>1. Article Addressed to: Peter K. Gouldthorpe 5663 Forkwood Trace Acworth GA 30101</p>		<p>B. Received by (Printed Name) <i>Sandra Gouldthorpe</i></p> <p>C. Date of Delivery 3/31/11</p>	
		<p>D. Is delivery address different from item 1? <input type="checkbox"/> Yes <input type="checkbox"/> No If YES, enter delivery address below: <input type="checkbox"/> No</p>	
		<p>3. Service Type <input checked="" type="checkbox"/> Certified Mail <input type="checkbox"/> Express Mail <input type="checkbox"/> Registered <input checked="" type="checkbox"/> Return Receipt for Merchandise <input type="checkbox"/> Insured Mail <input type="checkbox"/> C.O.D.</p>	
		<p>4. Restricted Delivery? (Extra Fee) <input type="checkbox"/> Yes</p>	
<p>2. Article Number (Transfer from service label)</p>		<p>7002 2030 0002 6889 4382</p>	

EXHIBIT G

Wigley, David

From: Wigley, David
Sent: Wednesday, April 06, 2011 9:27 PM
To: 'pkgould@juno.com'
Cc: Pappas, Pete G.; Quittmeyer, Peter C.; Wigley, David
Subject: FW: Correspondence regarding U.S. Pat. Appl. 10/537,141
Importance: High
Follow Up Flag: Follow up
Flag Status: Red
Attachments: 03-29-11 Ltr to P.Gouldthorpe from D.Wigley.pdf; Certification Statement.pdf; Published Patent Application.pdf; Pending Claims.pdf

6 April 2011

Dear Pete,

I am re-attaching a copy of the letter and accompanying documents that you received last week, and I would appreciate a response from you. Please let me know if you would like to discuss this further.

Sincerely,

David E. Wigley, Ph.D. | *Counsel* | 404.853.8072

From: Wigley, David
Sent: Tuesday, March 29, 2011 8:21 PM
To: 'pkgould@juno.com'
Cc: Pappas, Pete G.; Quittmeyer, Peter C.; Wigley, David
Subject: Correspondence regarding U.S. Pat. Appl. 10/537,141
Importance: High

29 March 2011

Dear Pete,

Attached is a courtesy copy of a letter regarding inventorship and the ByoCoat "Plant Fungal Diseases" application (10/537,141) that we sent to you today by Certified Mail, along with enclosures that include the application itself, the currently pending claims, and the certification statement we have discussed previously. Please let me know if you would like to discuss this again.

Yours sincerely,

David E. Wigley, Ph.D. | *Counsel*



4/7/2011

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